

REMARKS/ARGUMENTS

I. Summary of Office Action

Claims 1-12 are pending.

Claims 4, 7 and 11 were objected to on the basis of informalities and typographical errors.

Examiner rejected Claims 1, 2, 4 - 9, 11 and 12 under 35 USC 103(a) in light of Hashima et al (US 5,521,843) in view of Habibi et al (US 6, 816,755).

Examiner rejected Claims 3 and 10 under 35 USC 103(a) over Hashima ('843) in view of Habibi ('755) and further in view of Verghese (US 7,038,709).

Summary of Examiner Telephone Interview

The Examiner recommended changes to the claims that would help to differentiate Applicant's invention from the prior art of record. Specifically, the Examiner recommended adding the limitation of claim 4 that the camera is repositioned in the same position in which the reference image was taken to claims 1 and 11. The Examiner also recommended incorporating language found in paragraph 0016 of the specification into the independent claims 1, 4 and 11 to clearly define the stationary platform and user interface of Applicant's invention. The Examiner asserted that these limitation and any others added by Applicant to the claims would be beneficial in furthering the prosecution of the application.

II. Claim Objections

The Examiner objected to claims 4, 7 and 11 for a typographical error (e.g. "form" rather than "from") and the use of the phrase "adapted to". Applicant has amended claims 4, 7 and 11 addressing all the Examiner's objections as stated. A clean claim set is attached hereto.

III. Claim Rejections – 35 USC 103(a)

The Examiner has rejected claims Examiner rejected Claims 1, 2, 4 - 9, 11 and 12 under 35 USC 103(a) in light of Hashima et al (US 5,521,843) in view of Habibi et al (US 6, 816,755).

Examiner rejected Claims 3 and 10 under 35 USC 103(a) over Hashima ('843) in view of Habibi ('755) and further in view of Verghese (US 7,038,709). Applicant opines the amendments to independent claims 1, 4 and 11 presented in this response render moot and, alternatively, overcome the objections predicted on 35 USC 103(3). However, Applicant expounds below on the differences between Applicant's inventions and the art cited by the Examiner.

- A. Applicant respectfully asserts that the combination of Hashima with Habibi does not support a valid 103(a) grounds for rejection of Applicant's invention.

As regard independent claim 1,

Examiner asserts Hashima teaches an imaging system to reposition an image capture in a position relative to a subject of interest according to six degrees of freedom (col 7, lines 38-65)

Examiner further asserts that Hashima teaches that the reference image is of a target mark and Habibi teaches capturing a reference image of a random or arbitrary scene of interest (Figure 4 col 6 line 6-14, column 8 line 65)

The 6 features selected from the reference image are normal features of the object, which may comprise edges, holes, corners or blobs. Thus a target mark such as that taught by Hashima is not required and features can be extracted from the object being photographed (i.e. acquired of a random or arbitrary scene of interest)".

The Examiner further states:

“Therefore it would have been obvious to a person having ordinary skill in the art at the time of the inventions to enable the imaging system taught by Hashima et al to acquire a reference image of a random or arbitrary scene of interest and use features extracted from said reference image for the positional adjustment computation as taught by Habibi et al for the benefit of reducing the number of parts by eliminating the target mark while still maintaining a high level of accuracy and repeatability. (Habibi et al column 1, lines 40-45).

Habibi teaches robotic assembly and requires 6 features to align the robotic placement device. Habibi teaches that the imaging device must first be calibrated in the “Training Space” (column 4, lines 20-25) before the 6 extracted features can be used to reposition the imaging device. Applicant does not require either a calibration step or a “Training Space” to align.

It would not have been obvious – the field of robotic assembly is not close to the field of building construction. The problems Habibi is solving are not those solved by Applicant.

Habibi addresses problems of high speed robotic assembly in which the robot works in a fixed environment and is calibrated within that environment. Applicant addresses building construction in which each subject of interest may reside in a totally different environment.

B. Applicant respectfully posits that the rejection of claims 3 and 10, predicated on the combination of Hashima, Habibi and Verghese, cannot stand in light of the foregoing argument.

IV. Other Prior Art Cited

The Examiner cites additional prior art as pertinent to Applicant’s invention. Applicant asserts the claims as amended herein teach an invention not anticipated or rendered

obvious by any of the art cited by the Examiner, single or in combination. Applicant expounds below on differences between Applicant's invention and the cited art.

With respect to Pryor (US 6,044,183): Claim 1 requires a data base of object features; camera position known at all times, and the method determines object position from knowing camera position, and use of multiple cameras is possible but not required; and relies on Pinkney et al. (US 4,219,847) for computations to solve photogramatic equations.

However, Pinkney (US 4,219,847) does not teach broadly applicable photogramatic calculations – but rather are limited to extracting the centroid of blobs in analog video imaging devices. Pinkney provides no details of how to use points extracted from blob to obtain good photogramatic calculation, and Applicant opines that practically speaking one needs more than 4 points to get a useful extraction unless the imaging device is calibrated in a prior calibration step. Moreover, Applicant does not share similarities with Pryor or Pinkney other than the most general aspect of dealing with camera positioning relative to an object of interest.

With respect to Pryor (US 4,753,569) pertaining to perfecting camera position relative to object using means independent of robot guidance, calibration is required and Applicant's invention is different at least in the fact that Applicant does not require calibration.

With respect to Pryor (US 4,769,700), which patent pictures a tractor going into a barn and some dotted lines germane to tractor path, Pryor says "it can be done!", and, without actually teaching how to do it, refers to other patents. The patents referred to address extracting centroid of blob in video camera not about the photogramatic calculations. With respect to Pinkney et al. (US 4,219,847) as mentioned hereinabove, photogramatic calculations are not taught - only extractions of

centroid of blob in analog video camera. Pinkney provides no details of how many points used to extract from blob to obtain good photogramatic calculation, and Applicant opines that practically speaking one needs more than 4 to get a useful extraction. Moreover, Applicant does not share similarities with Pryor or Pinkney other than the most general aspect of dealing with camera positioning relative to an object of interest.

With respect to Eian et al. (US 7,277,599), which pertains to 3d imaging using single camera, calibration of camera is required. Applicant's invention is different at least in the fact that Applicant does not require calibration.

V. CONCLUSIONS

In view of the foregoing, it is respectfully urged that all of the present claims of the application are patentable and in a condition for allowance. Notice of allowance is earnestly solicited. The undersigned applicant can be reached at 650-960-3362 to facilitate prosecution of this application, if necessary.

Respectfully submitted,

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